WHAT IS CLAIMED IS:

1. A compound of formula (I):

$$R^2$$
 R^3 R^4
 R^1 S
 $N = NH_2$

5 wherein:

R¹ is selected from the group consisting of:

(1) -C₁₋₆alkyl,

(2) -C₂₋₆ alkenyl,

10 (3) $-C_{0-6}$ alkyl $-C_{3-6}$ cycloalkyl,

(4)

(5) heteroaryl selected from the group consisting of furyl, pyranyl, benzofuranyl, isobenzofuranyl, chromenyl, thienyl, benzothiophenyl, pyrrolyl, pyrazolyl, imidazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolyl, indazolyl, benzimidazolyl, quinolyl and isoquinolyl,

wherein

- (a) said alkyl, alkenyl or cycloalkyl is unsubstituted or substituted with one or more halogen, -C₁-6alkyl, -C₁-6alkoxy, hydroxy or cyano, and
- (b) said heteroaryl is unsubstituted or substituted with one or more halogen, -C₁-6alkyl, -C₁-6alkoxy, phenyl, hydroxy or cyano,

and wherein Rla, Rlb, Rlc, Rld and Rle are selected from the group consisting of:

- (a) hydrogen,
- (b) halogen,

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- (c) cyano,
- (d) hydroxyl,
- (e) $-C_{1-6}$ alkoxy,
- $(f) C(=O) O R^{7a}$,
- (g) $-O-C_{0-6}$ alkyl $-C(=O)-R^{7}a$,
- (h) $-N-R^{7}a-S(O)_{p}-R^{7}b$,

or R^{1b} and R^{1c} are linked together to form -O-CH₂-O- or -CH=CH-CH=CH-; wherein said aryl is unsubstituted or substituted with one or more halogen, -C₁-6alkyl, -C₁-6alkoxy, hydroxyl or cyano;

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R² is selected from the group consisting of:

- (1) hydrogen,
- (2) halogen,
- (3) $-C_{0-6}$ alkyl $-Q^{1}-C_{1-6}$ alkyl, wherein Q^{1} is O or S,
- 15 (4) -C₁₋₆alkyl, and
 - (5) hydroxyl;

R³ is selected from the group consisting of:

- (1) hydrogen,
- 20 (2) $-C_{1-6}$ alkyl,
 - (3) -C₀₋₆alkyl-C₃₋₆cycloalkyl,
 - (4) $-C_0$ -6alkyl- Q^2 - C_1 -6alkyl, wherein Q^2 is O, S or -C(=O)-O-, and
 - (5)

$$R^{3a}$$
 R^{3b}
 R^{3c}
 R^{3c}
 R^{3d}

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(6) —CH2-heteroaryl, wherein said heteroaryl is selected from the group consisting of furyl, pyranyl, benzofuranyl, isobenzofuranyl, chromenyl, thienyl, benzothiophenyl, pyrrolyl, pyrazolyl, imidazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolyl, indazolyl, benzimidazolyl, quinolyl and isoquinolyl,

wherein said alkyl or cycloalkyl is unsubstituted or substituted with one or more

(a) halogen,

(c) -C2-6alkenyl, (d) -C₁-6alkoxy, (e) $-C_{6-10}$ aryl, (f) hydroxyl, or 5 (g) cyano, and said heteroaryl is unsubstituted or substituted with one or more (a) -C₁-6alkyl, (b) -NR3fR3g, wherein R3f and R3g are selected from the group 10 consisting of: (i) hydrogen, (ii) -C1-6 alkyl, (iii) -C₁-6alkyl-C₆-10 aryl, wherein said aryl can be 15 substituted or unsubstited with halogen, cyano, C1-6 alkyl or C₁₋₆ alkoxy, or (iv) -C1-6alkyl-NR7aR7b, or N, R3f and R3g together form a 5 or 6 membered heterocyclic group, optionally containing an N, S or O atom in addition to the N atom 20 attached to R3f and R3g; and R3a, R3b, R3c, R3d and R3e are selected from the group consisting of: 25 (i) hydrogen, (ii) halogen, (iii) cyano, (iv) hydroxyl, $(v) - C_{1-6}$ alkyl, $(vi) -O-R^{7a}$, 30 $(vii) - (C=O) - O - R^8,$ (viii) $-NR^{7a}-S(O)_p OR^{7b}$, $(ix) - NR^{7}a - S(O)_p R^{7}b$, (x) –C₀₋₆alkyl -S(O)m R⁷a, $(xi) - C(=O) - NR^{7}aR^{7}b$ 35

(b) $-C_{1-6}$ alkyl,

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$$(xii) - C(=O) - R^8$$

$$(xiii) -NH-C(=O)-R^{7}a,$$

$$(xv) -N_3$$

$$(xvi) - NO_2$$
,

(xvii) C₆₋₁₀ aryl, wherein said aryl can be unsubstituted or substituted with one or more

- (A) halogen,
- (B) cyano,
- (C) - C_{1-6} alkyl,
- (D) $-C_{1-6}$ alkoxy,
- $(E) C(=O) O R^{7}a$
- $(F) C(=O) R^{7a}$
- (G) NR7aR7b,
- $(H) -NR^{7}a-S(O)_{p}-R^{7}b,$
- (I) $-NR^{7}a-C(=O)-R^{7}b$,
- (J) -NO₂

(xviii) heteroaryl selected from the group consisting of furyl, pyranyl, benzofuranyl, isobenzofuranyl, chromenyl, thienyl, benzothiophenyl, pyrrolyl, pyrazolyl, imidazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolyl, indazolyl, benzimidazolyl, quinolyl and isoquinolyl,

wherein said heteroaryl is unsubstituted or substituted with one or more

- (A) - C_{1-6} alkyl, or
- (B) -C₁₋₆ alkoxy;

or R^{3c} and R^{3d} are linked together to form phenyl or the group $-O-CH_2-O-$ or -CH=CH-CH=CH-;

or R^2 and R^3 are linked to form a carbocyclic ring (A):



wherein Q³ is selected from the group consisting of:

- $(1) CR^{7}aR^{7}b_{-}$
- (2) -CR7aR7bCR7cR7d-,
- $(3) CR^{7}a = CR^{7}b_{-}$
- (4) -CR7aR7bCR7cR7dCR7eR7f-,
- (5) -CR7a=CR7bCR7cR7d-, and
- (6) -CR7aR7bCR7d=CR7e-;

R4 is selected from the group consisting of:

- (1) hydrogen,
- 10 (2) halogen,

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- (3) –C₁₋₆alkyl,
- (4) -C₂₋₆alkenyl,
- (5) $-C_{2}$ -6alkynyl,
- (6) phenyl,
- 15 (7) benzyl, and
 - (8) heteroaryl selected from the group consisting of furyl, pyranyl, benzofuranyl, isobenzofuranyl, chromenyl, thienyl, benzothiophenyl, pyrrolyl, pyrazolyl, imidazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolyl, indazolyl, benzimidazolyl, quinolyl and isoquinolyl,

wherein said alkyl, alkenyl, alkynyl and phenyl is unsubstituted or substituted with one or more

- (a) halogen,
- (b) cyano,
- (c) hydroxyl,
- (d) phenyl,
 - (e) $-C_{1-6}$ alkyl,
 - (f) $-C_{1-6}$ alkoxy,
 - (g) $-C(=O)-O-R^{7}a$,
 - (h) $-C(=O) -R^{7a}$,
 - (i) -NR7aR7b,
 - (j) $-NR^{7}a-S(O)_{p}-R^{7}b$,
 - $(k) NR^{7}a C(=O) R^{7}b$
 - $(1) NO_2;$
- and said heteroaryl is unsubstituted or substituted with one or more:

- (a) $-C_{1-6}$ alkyl,
- (b) $-C(=O) -O-R^{7}a$
- (c) -C(=O) -R7a
- (d) $-NR^3fR^3g$, wherein R^3f and R^3g selected from the group consisting of
 - (i) hydrogen,
 - (ii) -C₁₋₆ alkyl,
 - (iii) $-C_{1-6}$ alkyl $-C_{6-10}$ aryl, wherein said aryl can be substituted or unsubstited with halogen, cyano, C_{1-6} alkyl or C_{1-6} alkoxy, or
 - (iv) $-C_{1-6}$ alkyl $-NR^{7}$ a R^{7} b;

or R³ and R⁴ may be joined together to form a 6-membered carbocyclic ring (B):

(B)
$$X^{1} \xrightarrow{X^{2}} X^{3} X^{4}$$

$$X^{1} \xrightarrow{X^{5}} X^{6}$$

$$R^{2} \xrightarrow{X^{5}} X^{6}$$

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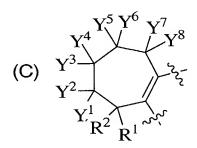
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provided that when R³ and R⁴ are joined together to form (B) then R¹ and R² are selected from the group consisting of hydrogen or C₁₋₆ alkyl, and X¹, X², X³, X⁴, X⁵ and X⁶ are selected from the group consisting of hydrogen, C₁₋₆ alkyl, C₃₋₆ cycloalkyl, cyano, alkylaryl or phenyl,

or R³ and R⁴ may be joined together to form a 7-membered carbocyclic ring (C):



provided that when R³ and R⁴ are joined together to form (C) then R¹ and R² are selected from the group consisting of hydrogen, C₁₋₆ alkyl or phenyl, or R¹ and R² can be linked together by the group – CH₂CH₂CH₂CH₂-; and Y¹, Y², Y³, Y⁴, Y⁵, Y⁶, Y⁷ and Y⁸ are selected from the group consisting of hydrogen, C₁₋₆ alkyl, C₃₋₆ cycloalkyl, cyano, alkylaryl or phenyl,

or R1 and Y5, or R1 and Y7, are linked together by -CH2-,

or R¹ and Y¹, or Y¹ and Y³, are linked together to form a phenyl or cyclopentyl ring;

R⁷a , R⁷b, R⁷c, R⁷d, R⁷e and R⁷f are selected from the group consisting of:

- (1) hydrogen,
- (2) C₁₋₆ alkyl, and
- (3) C_{6-10} aryl;

wherein said alkyl or aryl is unsubstituted or substituted with one or more halogen, $-C_{1-6}$ alkyl, $-C_{1-6}$ alkoxy, hydroxyl or cyano;

R⁸ is selected from the group consisting of:

- 15 (1) hydrogen,
 - (2) C₁₋₆ alkyl, and
 - (3) C₆₋₁₀ aryl, wherein said aryl is unsubstituted or substituted with one or more halogen,
 - -C₁-6alkyl, -C₁-6alkoxy, hydroxy or cyano;

20 n is 0, 1, 2 or 3

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m is 0 or 1;

p is 1 or 2;

and pharmaceutically acceptable salts thereof, and individual enantiomers and diastereomers thereof.

- 2. The compound of Claim 1 wherein R³ is selected from the group consisting of:
- (1) -C₁₋₆alkyl,
- (2) -C₀₋₆alkyl-C₃₋₆cycloalkyl,
- (3)

$$R^{3a}$$
 R^{3c}
 R^{3c}
 R^{3c}
 R^{3d}
, and

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(4) —CH₂-heteroaryl, wherein said heteroaryl is selected from the group consisting of furyl, pyranyl, benzofuranyl, isobenzofuranyl, chromenyl, thienyl, benzothiophenyl, pyrrolyl, pyrazolyl, imidazolyl, pyridyl,pyrazinyl, pyrimidinyl, pyridazinyl, indolyl, indazolyl, benzimidazolyl, quinolyl and isoquinolyl.

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3. The compound of Claim 2 wherein R^3 is

$$R^{3a}$$
 R^{3b}
 R^{3c}
 R^{3c}
 R^{3d}

and n is 1.

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4. The compound of Claim 2 wherein R1 is

and m is 0.

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- 5. The compound of Claim 4 wherein R^{1a} , R^{1b} , R^{1d} and R^{1e} are hydrogen, and R^{1c} is selected from the group consisting of halogen, C_{1-6} alkyl and C_{1-6} alkoxy.
 - 6. The compound of Claim 2 wherein R² is hydrogen.

- 7. The compound of Claim 2 wherein R⁴ is hydrogen.
- 8. The compound of Claim 1 which is a compound of formula (III)

$$\mathbb{R}^{1}$$
 \mathbb{R}^{1}
 \mathbb{R}^{1}
 \mathbb{R}^{1}
 \mathbb{R}^{1}
 \mathbb{R}^{2}
 \mathbb{R}^{4}
 \mathbb{R}^{1}
 \mathbb{R}^{1}

9. The compound of Claim 8 wherein R¹ is

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and m is 0.

- 10. The compound of Claim 9 wherein Q³ is selected from the group consisting of
- $(1) CR^{7}aR^{7}b_{-}$
- (2) -CR7aR7bCR7cR7d-, and
- (3) -CR7aR7bCR7cR7dCR7eR7f-.
- The compound of Claim 10 wherein R^{1d} is selected from the group consisting of halogen, C₁₋₆ alkyl, C₁₋₆ alkoxy and cyano, and R^{1a}, R^{1b}, R^{1c} and R^{1e} are hydrogen.
 - 12. The compound of Claim 9 wherein R^{1b} and R^{1d} are selected from the group consisting of halogen, C_{1-6} alkyl, C_{1-6} alkoxy and cyano, and R^{1a} , R^{1c} and R^{1e} are hydrogen.
- 20 13. The compound of Claim 8 wherein Q³ is selected from the group consisting of -CH₂CH₂- and -CH₂CH₂-.
 - 14. The compound of Claim 1 which is a compound of formula (IV)

$$X^2$$
 X^3
 X^4
 X^5
 X^6
 X^6

- 15. The compound of Claim 14 wherein R¹ and R² are hydrogen.
- 16. The compound of Claim 1 which is a compound of formula (V)

$$Y^3$$
 Y^4
 Y^5
 Y^6
 Y^7
 Y^8
 X^8
 X^8

17. The compound of Claim 1 which is selected from the group consisting of

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and pharmaceutically acceptable salts thereof.

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18. The compound of Claim 1 which is selected from the group consisting of

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Example 5 1 5 Structure

10 CI NH3

11
$$H_3C$$
 CH3

11 H_3C CH3

11 H_3C CH3

11 H_3C CH3

12 H_3C CH3

14 H_3C CH3

15 H_3C CH3

16 H_3C CH3

17 H_3C CH3

18 H_3C CH3

19 H_3C CH3

10 H_3C CH3

11 H_3C CH3

11 H_3C CH3

12 H_3C CH3

13 H_3C CH3

14 H_3C CH3

15 H_3C CH3

16 H_3C CH3

17 H_3C CH3

18 H_3C CH3

18 H_3C CH3

19 H_3C CH3

10 H_3C CH3

11 H_3C CH3

11 H_3C CH3

12 H_3C CH3

13 H_3C CH3

14 H_3C CH3

15 H_3C CH3

16 H_3C CH3

17 H_3C CH3

18 H_3C CH3

19 H_3C CH3

10 H_3C CH3

11 H_3C CH3

11 H_3C CH3

12 H_3C CH3

13 H_3C CH3

14 H_3C CH3

15 H_3C CH3

16 H_3C CH3

17 H_3C CH3

18 H_3C CH3

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Example 1 1 1 1 Structure

19
$$H_{3}C \longrightarrow 0$$

$$N = NH_{3}$$
20
$$21$$

$$22$$

$$CH_{3}$$

$$NH_{3}$$

$$CH_{3}$$

$$NH_{3}$$

$$CH_{3}$$

$$NH_{3}$$

$$NH_{$$

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| Example | L | Example | Structure

$$H_3C_0$$
 $N=0$
 $N=0$
 $N=0$
 $N=0$

Sxample	bil detaile
41	S N=\NH3
42	S N=\NH3
43	CI Ni NH ₂
44	CI Ni S
45	S N= NH ₂
46	S NH
47	NH3
48	H ₃ C NH ₃
49	H ₃ C S NH;
50	F F S NH3
51	HO NH3

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Example Structure

example	Structure
52	N=\N+\frac{1}{2}
53	N=S NH3
54	Br NH ₂
55	N NH3
56	H_2C NH_3
57	H_2C N
58	H_3C NH_3^+
59	H_3C N N N
60	S N=(NH ₃
61	H_2C $N=$ $N=$ NH_3
62	N=S NH ₃

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63
$$H_{2}C \longrightarrow H_{3}^{*}$$
64
$$H_{2}C \longrightarrow H_{3}^{*}$$
65
$$H_{3}C \longrightarrow H_{3}^{*}$$
67
$$H_{3}C \longrightarrow H_{3}^{*}$$
68
$$H_{4}C \longrightarrow H_{3}^{*}$$
69
$$H_{4}C \longrightarrow H_{3}^{*}$$
70
$$H_{5}C \longrightarrow H_{3}^{*}$$
71
$$H_{5}C \longrightarrow H_{3}^{*}$$
71
$$H_{5}C \longrightarrow H_{5}^{*}$$
71
$$H_{7}C \longrightarrow H_{3}^{*}$$
72
$$H_{7}C \longrightarrow H_{3}^{*}$$
73

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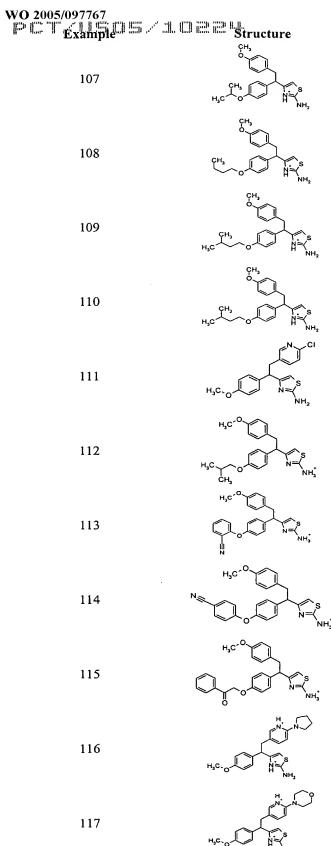
Example - 1 - 1 - Structure

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FLTExample 5 / 1 | 5 | Structure

$$H_3C$$
 $N=$
 $N=$
 $N=$
 $N=$
 $N=$
 $N=$

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FCTExample Structure

Éxample	Structure
96	H ₃ C _{-O} N= S NH ₃
97	H ₂ C. O N=\ N=\ NH,
98	H ₃ C, O N= S NH ₃
99	H ₃ C. _O NH ₃ 's
100	H ₃ C. NH ₃
101	H ₃ C. _O NH ₃
102	H ₃ C. N S NH3
103	H ₃ C _C O N N N N N N N N N N N N N N N N N N N
104	S NH ₃
105	CH ₃ O NH ₂
106	CH ₃ CH ₃ S H NH ₂



WO 2005/097767 FCTExample 5 / 1022 Structure

WO 2005/097767 FCTEXAMPLE STUCTURE

WO 2005/097767 Example 2 1 0 2 2 structure

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FL TExample 3 / 1 0 = 5 tructure

Example	II. L. Structure
151	O CHOH, NH, NH,
152	S NH3
153	N=\S
154	H ₃ C. _O CH ₃ SNH ₃
155	H ₃ C. O N÷ NH ₂
156	H ₃ C. _O CH ₃
157	F F NH ₂
1`58	H ₃ C ₀ N= NH ₃
159	H ₃ C ₂ O N N N N N N N N N N N N N N N N N N N
160	H ₂ C ₁ O N N N N NH ₃
161	H ₃ C ₁ O N N N N N N N N N N N N N N N N N N N

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Example | 1 | 2 | Structure

171

WO 2005/097767 Example 5 1 5 5 Structure

Lxampie	Structure
184	H ₃ C N S NH ₃
185	H ₃ C. ON N=\S
186	S CH ₃
187	H ₃ C. _O N=\s NH;
188	H ₃ C. _O N=\s
189	H ₃ C. ₀ OH
190	H ₃ C ₂ O Ni S
191	H ₃ C ₂ O N N NH ₃
192	F S N S NH,
193	F S NH,
194	H ₃ C-N S

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FCTExample - 10 = Structure

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Example 5 / 1 0 5 5 structure

Example	3 Structure
217	H ₃ C ₂ O N ₂ S NH ₃ 'S
218	H ₃ C. _O CH ₃ CH
219	O.N.S NH3
220	H ₃ C. _O N=S NH ₃
221	H ₃ C. _O N=\s\NH' ₃
222	H ₃ C. NH' ₃
223	H ₃ C. _O N _N S
224	H ₃ C· ₀ N ² NH ₃
225	H ₃ C. ON N S NH' ₃
226	H ₃ C. _O N='S
227	H ₃ C. _O N=\s\NH' ₃

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Example Example Structure

Example Example	Min Man Ham Structure
228	H ₃ C _{·O} NE's
229	0-N-S NH3
230	H ₃ C.ON N=S
231	H ₃ C ₁ O _N
232	H ₃ C N= S
233	H ₃ C. _O N=\square\squ
234	H ₃ C. _O NH' ₃
235	FF H ₃ C. _O N= S
236	H ₃ C; S; NH3
237	H ₃ C _{·O} N ₋ S NH ₃
238	H ₃ C.ON N N N N N N N N N N N N N N N N N N

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Éxample	/ 1022 Structure
239	H ₂ C. _O N=S NH ₃
240	CH3 OH3C-ONNS NH3;
241	H ₃ C. _O N ₁ S N ₁ S
242	H ₃ C NH ₃
243	o.N. s N.C. S. N.Y.
244	H ₃ C. ₀ NH' ₃
245	H,C.O N=S
246	H ₃ C. _O N=\square\squ
247	H ₃ C· _O NH ₃
248	H ₃ C. ₀ NH ₃ 's
249	H ₃ C. _O H ₃ C. _O N=S NH ₃

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FCTExample 5 - 1 CE Structure

Example	Structure
250	H ₃ C. _O N=S NH ₃
251	H ₃ C. _O N N N N N N N N N N N N N N N N N N N
252	H ₃ C· _O NH ₃
253	H ₃ C·O N N S NH3
254	0-N-CH3 CH3 NH3
255	O.N. CH3 O.N. S NH3
256	H,C. O N N S NH3
257	H ₃ C.O N N NH ₃
258	H ₃ C ₁ O N NH ₃
259	O.N. CH,
260	H ₃ C. ON N N NH3

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and pharmaceutically acceptable salts thereof.

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19. The pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

- 20. A method for treating Alzheimer's disease in a patient in need thereof comprising administering to the patient a therapeutically effective amount of a compound of Claim 1 or a pharmaceutically acceptable salt thereof.
 - 21. A method of inhibiting HIV protease in a subject in need thereof which comprises administering to the subject a therapeutically effective amount of a compound of Claim 1 or a pharmaceutically acceptable salt thereof.
 - 22. A method of treating infection by HIV in a subject in need thereof which comprises administering to the subject a therapeutically effective amount of a compound of Claim 1 or a pharmaceutically acceptable salt thereof.
 - 23. A method of treating AIDS in a subject in need thereof which comprises administering to the subject a therapeutically effective amount of a compound of Claim 1 or a pharmaceutically acceptable salt thereof.